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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPELLANTS:	Hetzer et al.	CONFIRMATION NO. 6272
SERIAL NO.:	09/911.811	GROUP ART UNIT: 2853
FILED:	July 24, 2001	EXAMINER: Leonard s. Liang
TITLE:	"ARRANGEMENT AND METHOD FOR DATA FOLLOW UP FOR WARMUP CYCLES OF INK JET PRINT HEADS"	

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APPELLANTS' MAIN BRIEF ON APPEAL

S I R:

In accordance with the provisions of 37 C.F.R. §41.37, Appellants herewith submit their main brief in support of the appeal of the above-referenced application.

REAL PARTY IN INTEREST:

The real party in interest is the assignee of the present application, Francotyp-Postalia GmbH, a German corporation, which is the successor to Francotyp-Postalia AG & CO. KG, identified as the Assignee in the records of the United States Patent and Trademark Office.

RELATED APPEALS AND INTERFERENCES:

The present Appeal is related to the co-pending Appeal in Serial No. 10/842,694, filed on May 10, 2004 as a divisional application of the present application, claiming a method comparable to the apparatus which is the subject of the claims on appeal in the present application. The Notice of Appeal for Serial No. 10/842,694 was filed simultaneously with the Notice of Appeal for the present application, and the Appeal Brief also is being filed simultaneously herewith. An

Appeal No. has not yet been assigned to Serial No. 10/842,694. No decision has rendered by the Board of Patent Appeals and Interferences in connection with the Appeal of Serial No. 10/842,694.

STATUS OF CLAIMS:

The present application was filed with claims 1-23 as original claims, which included claims 1-12 that are the subject of the present Appeal, and claims 13-23 directed to a corresponding method. In response to a restriction requirement, claims 13-23 were cancelled from the present application and made the subject of the aforementioned divisional application Serial No. 10/842,694.

A further claim 24 was added during previous prosecution, but has now been cancelled. Claims 1-12, which are the subject of the present Appeal, therefore constitute all pending claims of the application.

STATUS OF AMENDMENTS:

No Amendment has been filed following the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER:

The subject matter of the claims on appeal concerns an arrangement for data follow-up in the warm-up cycle. In general, the apparatus that is the subject of the claims on appeal makes use of data representing at least one predetermined condition that are stored. The predetermined condition can be temperature-related conditions, history-related conditions and user-related conditions. A sensor measures ambient temperature, and a measurement also is made of the temperature of the ink jet printhead. A control unit determines a warm-up data for a fast start for a current warm-up cycle dependent on the ambient temperature and dependent on the (at least one) predetermined condition.

Figure 1 shows a perspective view of a postage meter machine 1 opened at the top. The postage meter machine 1 has a slot-shaped opening 3 in its housing 4. The transport direction for a supplied piece of mail (not shown) is identified by an arrow and proceeds from the upper left to the bottom right. Given further transport, the piece of mail comes to lie against a guide plate 2 of the postage meter machine 1. The housing 4 opened at the top shows two 1/2 inch ink jet print heads positioned in printing position. (p. 9, l.15-21)

Each print head has its own data memory and ink store and is therefore also referred to as an ink cartridge. An ink storage container holds approximately 40 ml of ink. The connection side of the 1/2 inch ink cartridges 21, 22 is fashioned in a specific, predetermined way. For electronic signal conversion and electromechanical connection, corresponding control and contacting units 211 and 221 are adapted to the connection side of the 1/2 inch ink cartridges 21, 22, respectively. (p.9, l.22 - p.10, l.4)

Figure 2 shows an ink cartridge 21 that has an electronic semiconductor chip 2100 in a head that is connected to a neck 2103. The head has a nozzle plate 2104 in the ejection direction and — orthogonally thereto — a parallel interface with an electrical contacting unit 2105 for the drive of the ink jet print head. (p. 10, 1.5-8) The ink cartridge 21 has a belly-shaped ink reservoir 2106 as an ink store and — lying opposite thereto — an electronic memory chip 210 for storing warmup data of the ink jet print head 21 with electrical contacts 2107 for interrogating the warmup data, the filling level data and other data. (p.10, 1.9-13) The latter data include a manufacturer identification number on the basis of which the control unit of the printer device can check whether a valid ink cartridge 21 has been installed. (p.9,

l.13-15) A mechanical projection 2108 prevents insertion into the printer or device of ink cartridges that are not authorized by the manufacturer of the printer device. (p.9, l.15-17) The memory chip 210, the contacts 2107 and the projection 2108 are preferably combined in a structural unit and non-releasably secured (for example, by gluing) to the housing wall of the ink cartridge (at the neck or back). (p.9, l.17-19) The electronic memory chip 210 for storing warmup data has a serial interface with the electrical contacts 2107 for the interrogation of data. (p.9, l.19-21) A control and contacting unit 211, which mates with the projection 2108 and the contacts 2107 is provided for electronic signal conversion and mechanical connection to the 1/2 inch ink cartridge. (p.9, l.21-23)

Figure 4 shows a block circuit diagram with a control and contacting unit 211 (pin drive unit) and the electronic control unit of the printer device. The control unit 14 of the printer device 1 has at least one microprocessor 140, user interfaces 142, 143, a memory 200, a serial interface 144 and a clock/date module 145. For example, the control unit 14 can be for a postage meter machine and also can contain a secure accounting device 141 for reckoning frankings. (p. 12, l.7-12) The control unit 14 is connected to the memory 200. Via a contacting unit 2117 of the control and contacting unit 211, the control unit 14 is connected to the contacting unit 2107 of the memory 210 via a serial interface 144. The memory 210 is, for example, an E^2PROM or similar non-volatile write/read memory. (p.12, l.12-16) The control and contacting unit 211 contains an application-specific integrated circuit (ASIC) 2111 and a temperature sensor 2119 for determining the ambient temperature. (p. 12, l.16-18) The ink jet print head temperature from the sensor 2109 and an 8-bit ink cartridge serial number from the read-only memory 2102 (ROM) can be interrogated

via the contacting unit 2115 of a parallel interface of the ASIC 2111 of the control and contacting unit 211. (p. 12, l.18-21) This read-only memory 2102 supplies the 8-bit ink cartridge serial number to the contacting unit 2105 of the parallel interface of the semiconductor chip 2100 that is connected to the contacting unit 2115 of the parallel interface of the ASIC 2111. (p.12, l.21-24) The data stored in the memories 200 and 210 are called by the microprocessor 142 and the head temperature determined via the sensor 2109 is interrogated. (p.12,l24 - p.13,l.2) The ASIC 2111 of the control and contacting unit 211 receives serial signals that are now supplied by the control unit 14 of the printer device 1 so that these can be converted into parallel drive signals for the electronic semiconductor chip 2100. Controlled by the ASIC 2111, a voltage converter (DC/DC) 2112 generates the print voltage at the required amplitude. (p. 13, l.2-7)

Storage of warmup data under first conditions ensues, and second conditions are determined, and the appertaining warmup data are determined given current second conditions. (p. 13, l.17-19) The E^2PROM 210 arranged on the ink cartridge 21, 22 or a comparable non-volatile memory is provided for storing warmup data in a first memory area and the ink cartridge serial number in a second memory area, the latter being identical to the ink cartridge serial number stored in the memory ROM 2102. The microprocessor 140, for example, accesses the first memory area of the memory 200 or 210, with the warmup data using the ink cartridge serial number from the ROM 2102. (p.13, l.19-23) A manufacturer identification number of the manufacturer supplying the printer device 1 and ink cartridges 21, 22 can be present stored in the memories 200 or 210. (p.19, l.23 - p.14, l.3) The manufacturer identification numbers of all ink cartridges 21, 22 are identical. The authorization to

employ the ink cartridges 21, 22 can be checked by the microprocessor 140 on the basis of the manufacturer identification number that is present stored in a memory area of the memory 140. (p.14, l.3-7) The form of the contacts 2107, the nature of the interface (serial) and the mechanical projection 2108 additionally limit the attempted use of ink cartridges of a different manufacturer without authorization. The correctness of all code or numbers can, for example, be checked by a remote data center. (p. 14, l.7-10)

The storage of warmup data under first conditions ensues in a known way upon initial installation of the ink cartridge, and the check of the authenticity of the consumable (ink cartridge) can be triggered at the same time in a remote data center, namely on the basis of the manufacturer identification number and the 8-bit ink cartridge serial number or, alternatively, on the basis of a code word read out from the memory 210 by comparison to a reference code word stored in a remote data center. (p.14, l.16-22) The code word can also be formed by encryption of serial and identification numbers or is merely allocated to the serial number. Although the communication with the remote data center can be tapped into, it cannot be interpreted in order to generate counterfeit ink cartridges with a true ink cartridge serial number and manufacturer identification number. (p. 16, l22 - p.17, l.2)

On the basis of Figure 5, which shows a temperature/voltage diagram, the determination of the warmup data under first conditions given initial installation of the ink cartridge shall now be explained. A precondition is that the ambient temperature '$_U$ measured by the control and contacting units 211, 221 (pin driver unit) lies in the optimum range, and that, after calibration has ensued, the head temperature '$_K$ can

be measured by a temperature sensor of the print head. (p. 15, l.3-8) Given 1/2 inch ink jet cartridges, for example, 22 temperature values of the print head are measured after turn-on, these belonging to respectively predetermined print pulse voltage values. Each nozzle is driven a thousand times with a pulse voltage of $\geq$ 12 V given an approximately 2 μs pulse width. (p. 15, l.8-12) The print pulse voltage value is reduced in steps before every further measurement. The measured temperature curve is interpreted by seeking the local minimum of the temperature curve. (p.15, l.12-14) The appertaining print pulse voltage $U_P(\vartheta U_{K\min})$ is multiplied by a factor of 1.3. The optimum print pulse voltage value that derives is employed for the printing and for the warmup. During warmup, however, the pulse width is reduced to approximately 0.75 μs. (p.15, l.14-17) The optimum print pulse voltage value and the measured voltage temperature curve are non-volatilely stored. In the aforementioned example, one temperature/voltage curve is stored as 22 measured values in a first memory area upon new installation of an ink cartridge given a parameter (ambient temperature ϑ_U = 20°C). (p.15, l.17-21) The ink cartridge is automatically evaluated as new with a further parameter no if history-related data are not yet known. The equations

$$U_{Popt} = 1.3\, U_P(\vartheta_{K\min}) \quad (1)$$

$$U_{Popt} = F\{\vartheta_U, \vartheta_{K\min}, n_O\} \quad (2)$$

can be erected for the optimum print pulse voltage U_{Popt}, whereby the function F is determinant for the course of the curve. (p.15, l.21 - p.16, l.3) When other conditions prevail at the next activation (for example, ϑ_U = 25°C), a renewed measurement of a temperature/voltage curve can be inventively foregone since a U_{Popt} determination is

undertaken instead by a data follow-up on the basis of the temperature/voltage curve. (p. 16, l.3-7)

There are two fundamental possibilities for a data follow-up:

a) empirically determined data for an optimum print pulse voltage U_{Popt} at different ambient temperatures $'_U$ referenced to first conditions n_O are stored in a table.

b) algorithm for calculating the optimum print pulse voltage U_{Popt} given different ambient temperatures $'_U$ referenced to first conditions n_O (see Equation (1)). (p. 16, l.8-13)

For a print head that is not new, second conditions are to be additionally determined as a combination of parameters that enable a history-related and user-related adaptation in that further tables are produced dependent on the parameter n_P, O_{user}. The second conditions (print head age, filling level) are expressed by the history-related parameter n_P. In the simplest case, there is one second table since a distinction is only made between new (parameter n_O) and old (parameter n_P). The user-related parameter O_{user} generates a further adaptation for what is still a fast operational readiness. (p. 17, l.6-13)

The flowchart for the data follow-up for warmup cycles of an ink jet print head proceeds from Figure 6. After the start step 100, the control unit 14 preferably reads (step 101) and checks (step 102) the identification number ID of the cartridge manufacturer. A branch is made to the step 104 given a permitted cartridge manufacturer. Otherwise, a branch is made back to the step 101 via step 103 to output an error message. The quality is thus assured since only the cartridges of a

specific manufacturer are accepted. (p.17, l.18-24) A check is carried out in step 104 to determine whether a reinstallation of an ink cartridge should ensue. Ink cartridges that have already been used and replaced in the interim can also be reintroduced. Warmup data with parameter n_o, the first condition and, possibly, a code word are already stored for such a non-new ink cartridge. (p.17, l.24 - p.18, l.3) The control unit 14 has a security module 141 that is capable of forming a code (word) by encryption of serial number and manufacturer identification number. The code word is stored in the respective memories, such as the memory 210 of the ink cartridges 21, 22. When a code word or the parameter n_o is stored, no reinstallation is undertaken and a branch is made to the step 111 in order to implement a data follow-up for a fast start in following steps. Up to 256 different serial numbers with allocated warmup data and parameters can be stored in a memory 200 of the postage meter machine. The need for memory space can be reduced the more data (code, serial number and allocated warmup data and parameters) there are that are stored in the respective memories of the ink cartridges themselves. (p.18, l.3-13)

When a new installation is to be undertaken, then the serial number is read first in the step 105 and the generation of a code that is allocated at least to the serial number potentially ensues. (p.18, l.14-16) After reading the serial number in step 105, a branch is made to step 106 in order to trigger the automatic communication of the code or of the serial number to the telepostage data center TDC. The communication alternatively can ensue later, for example given a communication for the purpose of a recrediting. An acquisition of the consumable that has been introduced and a check of the code of the serial number ensue in the TDC. (p. 18, l.16-21) The ink cartridge of the specific manufacturer with the serial

number that has been read must in fact have been supplied to the user. Otherwise, measures for protection against pirated products can be undertaken. Given a new installation, the ambient temperature ϑ_U is measured and a curve for the head temperature $\vartheta_K = f\{U_P\}$ is determined in the step 107, the latter being a function of the print pulse voltage U_P applied to the heating elements. A minimum of the head temperature ϑ_{Kmin} lies in the range $12V \geq U_P \ldots \geq U_{Pmin}$. (p. 18, l.24 - p.19, l.4) The print pulse voltage U_P (ϑ_{Kmin}) that is allocated to the minimum is determined in step 108. The optimum print pulse voltage is then determined according to the aforementioned Equation (1) and stored in the first memory area of the memory 200 or 210. Storage of the serial number or the code and the first conditions n_o in the second memory area of the memory 200 or 210 ensues in step 109. In the following step 110, a first table for the optimum print pulse voltage is selected dependent on the parameters or generated according to Equation (2). (p.19, 1.4-10)

From step 110, a branch is made via step 104 to step 111, where an interrogation is started as to whether second conditions were newly input. This would not be the case given a new installation, and branch is made to step 113, where an interrogation is started as to whether second conditions are present stored. (p. 19, l.11-14) When a parameter O_{user} to the effect that a fast operational readiness should be produced was input and stored user-related at a previous time, a branch is made to a step 114. (p.19, l.15-17) This is usually not the case given a new installation and a branch is made to step 116, where warmup data are stored allocated to the serial number of the ink cartridge. (p.19, l.17-19) A pre-heating with pulses having the duration t = 0.75 µs and an amplitude U_{Popt} can thus be

undertaken in step 117. (p.19, l.19-20) The head temperature repeatedly measured in step 118 is monitored (steps 119, 120). If it is found in step 119 that a minimum of the optimum head temperature has not been downwardly transgressed, a check ensues in step 120 to determine whether a maximum of the optimum head temperature range has been exceeded. (p.19, l.20-24) If the head temperature lies within the optimum head temperature range, then the end (step 122) is reached. If, however, the head temperature lies below the optimum head temperature range, then $\vartheta_K > \vartheta_{Kopt\,min}$ is not true, and a branch is made back to the step 117 for the pre-heating. (p.19, l.24 - p.20, l.4) The warmup pulses lead to a head temperature that rises in steps. Otherwise, an error message ensues (in step 121) if the check in step 120 shows that a maximum of the optimum head temperature range is exceeded (then, $\vartheta_K > \vartheta_{Kopt\,max}$ is not true). (p.20, 1.4-7) The reduction of the warmup cycles occurs given a used ink cartridge. The invention has the advantage that the warmup cycles with ink spraying of a new installation can be avoided given ink cartridges that are not new. When a method for data follow-up is employed for the warmup cycles, the warmup data $\cup_{Popt}$ and t = 0.75 µs stored in step 116 guarantee a warmup of the print head of a non-new ink cartridge in less than half the time, i.e. within a time of < 30 s. (p. 20, 1.7-12)

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL:

The following rejections are presented for review in the present Appeal:

Whether the subject matter of claims 1, 10 and 11 would have been obvious to a person of ordinary skill in the field of design and operation of ink jet printers under the provisions of 35 U.S.C. §103(a), based on the teachings of United States

Patent No. 4,791,435 (Smith et al.) in view of the teachings of United States Patent No. 5,107,276 (Kneezel et al.);

Whether the subject matter of claims 2-4, 6-8 and 12 would have been obvious to a person of ordinary skill in the field of design and operation of ink jet printers under the provisions of 35 U.S.C. §103(a), based on the teachings of Smith et al. in view of Kneezel et al., further in view of the teachings of United States Patent No. 5,812,156 (Bullock et al.); and

Whether the subject matter of claims 5 and 9 would have been obvious to a person of ordinary skill in the field of design and operation of ink jet printers under the provisions of 35 U.S.C. §103(a), based on the teachings of Smith et al. in view of Kneezel et al. and Bullock et al., further in view of the teachings of United States Patent No. 5,513,563 (Berson).

ARGUMENT:

Rejection of Claims 1, 10 and 11 Under 35 U.S.C. §103(a) Over Smith et al. and Kneezel et al.

The arrangement claimed in claim 1 on appeal requires a memory that is accessible by the control unit having a first memory area in which warm-up data are stored in re-writable fashion, and a second memory area containing data representing at least two predetermined conditions, the two predetermined conditions being selected from the group consisting of temperature-related conditions, history-related conditions and user-related conditions. The arrangement also includes an ambient temperature sensor. The control unit implements at least one measurement of the ambient temperature with the aforementioned sensor, and then determines warm-up data for a fast start dependent on the ambient temperature and dependent on the at least two predetermined conditions. This means that the

control unit formulates the warm-up data for the fast start dependent not only on the ambient temperature, but also dependent on at least two of temperature-related conditions, history-related conditions and user-related conditions.

Appellants respectfully submit the Smith et al reference is extremely general and uninformative as to how, or even if, information contained in the read-only memory section 2b of the microprocessor 2 is used by the pulse generator 24a to generate pulses that are supplied to the print head 21 for any purpose, much less during a warm-up cycle. In Figure 2A of the Smith et al reference, all of the signal lines proceeding from the data processing section 2a to the read-only memory section 2b proceed in one and only one direction, namely *from* the data processing section 2a *to* the read-only memory section 2b. Therefore, it is clear that the data processing section 2a of the microprocessor 2 does not and cannot make use of any of the information stored in the read-only memory section 2b. Although the data processing section 2a includes an input T from a temperature sensor TS located at the printhead 21 (i.e., *not* an ambient temperature sensor) this appears to be only for the purpose of feeding the temperature information through the data processing section 2a, and through the read-only memory section 2b, to the pulse generator 24a. The outputs a through g of the read-only memory section 2b are merely shown in Figure 2B as proceeding into the pulse generator 24a. The only designated or described function that takes place in the pulse generator 24a is to supply warm-up pulses from output b in Figure 2a to a section of the pulse generator 24a in Figure 2B designated "pulse width control." There is no indication whatsoever in the Smith et al reference that anything other than the sensed temperature is used to determine or set the pulse width of the warm-up pulses in the pulse generator 24a. There is not

even any indication of how the other information from the read-only memory section 2b is used at all by the pulse generator 24a, but presumably that information is used for normal text printing, since the only disclosed relationship between warm-up pulses and the pulse generator 24a in the Smith et al reference is the aforementioned "pulse width control."

Therefore, even in the context of the non-ambient temperature sensed in the Smith et al reference, there is no disclosure or suggestion in that reference that anything other than this sensed temperature is used to set the pulse width of the warm-up pulses. This is in contrast to the subject matter of claim 1 wherein the ambient temperature is sensed and this ambient temperature is then used, together with at least two other predetermined conditions, to determine the warm-up data with in the control unit that are used for a fast start.

The Examiner relied on the Kneezel et al reference as disclosing a sensor that is able to sense ambient temperature. Appellants agree that the Kneezel et al reference discloses such an ambient temperature sensor, but disagree with the Examiner's conclusion that there is a control unit in the Kneezel et al reference that is programmed to implement a measurement of the ambient temperature using that sensor, and to determine warm-up data for a fast start dependent on the ambient temperature and dependent on at least two predetermined conditions.

As can be seen in Figure 5A of the Kneezel et al reference, the ambient temperature sensor 55 supplies an output to a subthreshold pulse width controller 56. Optionally, the ambient temperature sensor 55 also supplies an output to a look-up table 57, which then supplies an output to the sub-threshold pulse width controller 56. The pulse width is then determined exclusively within the pulse width controller

56, and the already-determined pulse width is then supplied as an output from the subthreshold pulse width controller 56 to the logic controller 58. Therefore, in the Kneezel et al reference, the logic controller 58 merely receives an already-determined pulse width from the subthreshold pulse width controller 56. The logic controller 58 in the Kneezel et al reference, therefore, does not and cannot determine the pulse width dependent on other factors, since the pulse width has already been determined externally of the logic controller 58 and merely supplied as an input to the logic controller 58.

Therefore, even if the Smith et al reference were modified in accordance with the teachings of Kneezel et al, to use an ambient temperature sensor in place of, or in addition to, the temperature sensor TS disclosed in the Smith et al reference, there still is no teaching or suggestion in either of those references to do anything except use the ambient temperature, by itself, to set a pulse width of pulses that may (possibly) be used in a warm-up cycle. There is no teaching in either the Smith et al or Kneezel et al references to make use of the ambient temperature to determine warm-up data in combination with (dependent on) at least two predetermined conditions from the aforementioned list of predetermined conditions, as set forth in claim 1 of the present application.

Appellants respectfully submit it is only with the benefit of hindsight after reading the present disclosure that the Examiner has assumed that either the Smith et al reference or the Kneezel et al reference makes use of some sort of combination of the ambient temperature and at least two predetermined conditions for determining warm-up data for a fast start.

These arguments were made during prosecution before the Examiner, and in the Final Rejection the Examiner responded to those arguments. In that response, the Examiner stated that Appellants' argument rests on the contention that

> "The Smith et al. reference is extremely general and uninformative as to how, or even if, information contained in the read only memory section 2b of the microprocessor 2 is used by the pulse generator 24a to generate pulses that are supplied to the printhead 21 for any purpose, much less during a warm-up cycle. ...There is no indication whatsoever in the Smith et al. reference that anything other than the sensed temperature is used to determine or set the pulse width of the warm-up pulses in the pulse generator 24a. There is not even any indication of how the other information from the read only memory section 2b is used at all by the pulse generator 24a... ."

In response, the Examiner cited column 4, lines 52-63 of the Smith et al. reference, which states:

> In the microprocessor, the indication of printhead temperature is employed in a decision making process to determine the temperature condition of the nozzles, i.e., whether the nozzles are cold or whether the nozzles are overheating and is **used with processor based information as to the location of the nozzles on the substrate, the color of the ink in a particular printhead and the use profile of that printhead, for providing input to the logic array circuit 24 for producing print pulses for firing the nozzles of that particular printhead, to maintain uniformity in the ink drops which are fired.** (Emphasis added by Examiner)

The Examiner stated that although the figures themselves in the Smith et al. reference may seem general and uninformative, when coupled with the specification of Smith et al., it is quite clear that the Smith et al. reference discloses firing pulses not only based on the sensed temperature, but also based on some of the parameters in reference 2b, such as ink color and use profile. The Examiner also cited column 2, lines 8-13 of the Smith et al. reference in support of this position. The Examiner also noted that Figure 1 of the Smith et al. reference shows bus lines proceeding to and from the logic array and the microprocessor 2, but noted that only

one bus line is labeled with a reference number (reference no. 23). The Examiner stated it is possible that some of the other figures in the Smith et al. reference were meant only as illustrations of one such aspect of the invention.

In response, Appellants submit that the citations by the Examiner support Appellants' arguments, rather than refuting them. The passage cited by the Examiner, although making mention of the factors emphasized by the Examiner, still provides no guidance whatsoever to a person of ordinary skill in the art as to how those factors should be used. The passage by the Examiner simply provides a statement of a number of factors, together with a statement of an ultimate goal ("to maintain uniformity in the ink drops which are fired"), but neither this passage, nor any other passage in the Smith et al. reference, provides any information as to how those factors can or should be used to accomplish that goal. Clearly, there is no teaching in the Smith et al. reference that rises to the level of detail of the subject matter of claim 1 on appeal.

The provisions of 35 U.S.C. §103(a) require that the Smith et al. reference be interpreted in the manner of a person of ordinary skill who is seeking to solve a particular problem in the relevant technology, and who has not had the benefit of reading the disclosure of the present application. Appellants respectfully submit that the Examiner's belief that the Smith et al. disclosure, in particular the cited passages thereof, provides any specific information that would guide a person of ordinary skill in the field of design and operation of ink jet printers to arrive at the subject matter of claim 1 of the present application, results only from the Examiner having had the benefit of first reading Appellants' disclosure. Appellants respectfully submit that an

objective reading of the Smith et al. reference supports the position of the Appellants, rather than the position of the Examiner.

The Federal Circuit stated in *In re Lee* 227 F.3d 1338, 61 U.S.P.Q. 2d 1430 (Fed. Cir. 2002):

> "The factual inquiry whether to combine references must be thorough and searching. ...It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with."

Similarly, quoting *C.R. Bard, Inc. v. M3 Systems, Inc.,* 157 F.3d 1340, 1352, 48 U.S.P.Q. 2d 1225, 1232 (Fed. Cir. 1998), the Federal Circuit in *Brown & Williamson Tobacco Court v. Philip Morris, Inc.,* 229 F.3d 1120, 1124-1125, 56 U.S.P.Q. 2d 1456, 1459 (Fed. Cir. 2000) stated:

> [A] showing of a suggestion, teaching or motivation to combine the prior art references is an 'essential component of an obviousness holding'.

In *In re Dembiczak,* 175 F.3d 994,999, 50 U.S.P.Q. 2d 1614, 1617 (Fed. Cir. 1999) the Federal Circuit stated:

> Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.

Consistently, in *In re Rouffet,* 149 F.3d 1350, 1359, 47 U.S.P.Q. 2d 1453, 1459 (Fed. Cir. 1998), the Federal Circuit stated:

> [E]ven when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill in the art, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.

In *Winner International Royalty Corp. v. Wang,* 200 F.3d 1340, 1348-1349, 53 U.S.P.Q. 2d 1580, 1586 (Fed. Cir. 2000), the Federal Circuit stated:

> Although a reference need not expressly teach that the disclosure contained therein should be combined with another, ... the showing of combinability, in whatever form, must nevertheless be clear and particular.

Lastly, in *Crown Operations International, Ltd. v. Solutia, Inc.,* 289 F.3d 1367, 1376, 62 U.S.P.Q. 2d 1917 (Fed. Cir. 2002), the Federal Circuit stated:

> There must be a teaching or suggestion within the prior art, within the nature of the problem to be solved, or within the general knowledge of a person of ordinary skill in the field of the invention, to look to particular sources, to select particular elements, and to combine them as combined by the inventor.

In the aforementioned response of the Examiner in the Final Rejection, the Examiner stated that Appellants other arguments depend on the above argument regarding the teachings of Smith et al. Appellants acknowledge that Appellants' position regarding the teaching of Smith et al. is the starting point for all Appellants' other arguments, however, Appellants' argument in support of patentability is the totality of the above discussion, including the necessity of satisfying the rigorous evidentiary standards in order to justify a rejection under 35 U.S.C. §103(a). Appellants respectfully submit that the Examiner's rejection of claim 1 based on the teachings of Smith et al. and Kneezel et al. does not satisfy those rigorous evidentiary standards. In this context, the fact that the Smith et al. disclosure is so general is certainly relevant, but equally relevant is Appellants' disagreement with the Examiner's conclusions regarding the teachings of Kneezel et al. and, most importantly, Appellants' argument is based on a lack of any guidance or motivation or inducement in either of those references that satisfies the degree of specificity required by the above-cited Federal Circuit decisions in order to properly substantiate a rejection under 35 U.S.C. §103(a).

Claims 10 and 11 add further structure to the non-obvious combination of claim 1, and therefore neither of those claims would have been obvious to a person of ordinary skill in the field of design and operation of ink jet printers under the provisions of 35 U.S.C. §103(a), based on the teachings of Smith et al. and Kneezel et al., for the same reasons discussed above in connection with claim 1.

Rejection of Claims 2-4, 6-8 and 12 Under 35 U.S.C. §103(a) Based on Smith et al., Kneezel et al. and Bullock et al.

Each of claims 2-4, 6-8 and 12 depends directly or indirectly from claim 1, and therefore each of those claims embodies the subject matter of claim 1 therein. In view of the above discussion regarding the Smith et al./Kneezel et al. combination as applied against claim 1, Appellants respectfully submit that even if the Smith et al./Kneezel et al. combination were further modified in accordance with the teachings of Bullock et al., the subject matter of claims 2-4, 6-8 and 12 still would not result. Even if the Examiner's statements regarding the teachings of Bullock et al. are correct, Appellants respectfully submit the Examiner still has failed to present a properly supported bases for rejecting any claims 2-4, 6-8 and 12 under the provisions of 35 U.S.C. §103(a) based on the teachings of those references.

Rejection of Claims 5 and 9 Under 35 U.S.C. §103(a) Based on Smith et al., Kneezel et al., Bullock et al. and Berson

Each of claims 5 and 9 depends indirectly from claim 1, and therefore each of those claims embodies the subject matter of claim 1 therein. In view of the above discussion regarding the Smith et al./Kneezel et al. combination as applied against claim 1, Appellants respectfully submit that even if the Smith et al./Kneezel et al. combination were further modified in accordance with the teachings of Bullock et al., and Berson the subject matter of claims 5 and 9 still would not result. Even if the

Examiner's statements regarding the teachings of Bullock et al. and Berson are correct, Appellants respectfully submit the Examiner still has failed to present a properly supported bases for rejecting any claims 5 and 9 under the provisions of 35 U.S.C. §103(a) based on the teachings of those references.

CONCLUSION:

For the foregoing reasons, Appellants respectfully submit the Examiner is in error in law and in fact in rejecting claims 1-12 of the present application. Reversal of the those rejections is proper, and the same is respectfully requested.

This Appeal Brief is accompanied by a check for the requisite fee in the amount of $500.00.

Submitted by,

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CERTIFICATE OF MAILING

I hereby certify this correspondence is being deposited with the United States Postal Service as First Class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450 on April ~~18~~ 19, 2006.

Steven H. Noll

STEVEN H. NOLL

APPENDIX "A"

1. An arrangement for determining data for a warm-up cycle of an ink jet printhead, said arrangement comprising:

an ink cartridge having an ink jet printhead and a drive unit connected to the ink jet printhead for heating, measuring a temperature of, and driving the ink jet printhead;

a control unit connected to the drive unit for controlling the drive unit;

a memory accessible by said control unit having a first memory area in which warmup data are stored in re-writable fashion, and a second memory area in which data representing at least two predetermined conditions are stored, said at least two predetermined conditions being selected from the group consisting of temperature-related conditions, history-related conditions and user-related conditions;

a sensor connected to said drive unit for measurement of ambient temperature; and

said control unit being programmed to implement at least one measurement of said ambient temperature with said sensor, and to determine warm-up data for a fast start, executed in less than 30 seconds, for a current warm-up cycle dependent upon said ambient temperature and dependent on said at least two predetermined conditions.

2. An arrangement as claimed in Claim 1, said memory is a first memory, and wherein said arrangement comprises:

a second memory disposed on said ink cartridge, in which identification data uniquely identifying said ink cartridge, and data representing further predetermined conditions, are stored, and wherein said warm-up data stored in said first memory are allocated to said identification data.

3. An arrangement as claimed in Claim 2 wherein said ink cartridge has a serial number uniquely associated therewith, and wherein said identification data includes said serial number.

4. An arrangement as claimed in Claim 2 wherein said ink cartridge has a manufacturer identification number uniquely associated therewith, and wherein said identification data includes said manufacturer identification number.

5. An arrangement as claimed in Claim 2 wherein said ink cartridge has a serial number and a manufacturer identification number uniquely associated therewith, and wherein said control unit comprises a security module for forming a code word by encryption of said serial number and said manufacturer identification number, and wherein said control unit stores said code word in said second memory as at least a portion of said identification data.

6. An arrangement as claimed in Claim 1 wherein said memory is disposed on said ink cartridge and wherein said second memory area additionally contains identification data uniquely identifying said ink cartridge, and data representing further predetermined conditions allocated to said identification data, and wherein said control unit is programmed to interrogate said memory to

determine said warm-up data employing said further predetermined conditions allocated to said identification data.

7. An arrangement as claimed in Claim 6 wherein said ink cartridge has a serial number uniquely associated therewith, and wherein said identification data includes said serial number.

8. An arrangement as claimed in Claim 6 wherein said ink cartridge has a manufacturer identification number uniquely associated therewith, and wherein said identification data includes said manufacturer identification number.

9. An arrangement as claimed in Claim 6 wherein said ink cartridge has a serial number and a manufacturer identification number uniquely associated therewith, and wherein said control unit comprises a security module for forming a code word by encryption of said serial number and said manufacturer identification number, and wherein said control unit stores said code word in said second memory as at least a portion of said identification data.

10. An arrangement as claimed in Claim 1 wherein said drive unit includes a sensor for measuring the temperature of the ink jet printhead, said sensor generating sensor data representing said temperature, and wherein said control unit is programmed to interrogate said sensor data via said drive unit for determining said warm-up data.

11. An arrangement as claimed in Claim 1 comprising:

a user interface connected to said control unit for entering a user request for said fast start;

a communication link, connected to said control unit, to a remotely disposed telepostage data center which, upon receipt of said user request,

transmits a parameter for said fast start, including an identification of said user, to said control unit, and wherein said control unit is programmed to store said parameter in said memory and to employ said user related conditions, corresponding to the user identified by said parameter, as one of said at least two conditions for determining said warm-up data for said fast start.

12. An arrangement as claimed in Claim 1 further comprising a date clock module connected to said control unit for generating history-related data as said history-related conditions .

RELATED APPEALS AND INTERFERENCES APPENDIX

No decision by the Board of Patent Appeals and Interferences has been rendered in connection with the related appeal for Serial No. 10/842,694.

EVIDENCE APPENDIX

None.

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